

WHAT IS CLAIMED IS:

1. A digital amplifier adaptive pulse frame rate frequency control system comprising:
  - a sample rate converter;
  - a programmable controller operational in response to user selected input frequency data to generate control data bits; and
  - a system clock generator operational to generate a sample rate converter master clock signal in response to the control data bits such that the sample rate converter generates output data at a sample rate determined by the control data bits.
2. The digital amplifier adaptive pulse frame rate frequency control system according to claim 1 wherein the programmable controller comprises a data processing device selected from the group consisting of a computer, a digital signal processor (DSP), a CPU, and a micro-controller.
3. The digital amplifier adaptive pulse frame rate frequency control system according to claim 1 wherein the system clock generator comprises a frequency controller selected from the group consisting of a digital frequency synthesizer, and a programmable phase-locked loop.
4. The digital amplifier adaptive pulse frame rate frequency control system according to claim 1 wherein the system clock generator is further operational to generate audio clock signals at the sample rate determined by the control data bits.
5. The digital amplifier adaptive pulse frame rate frequency control system according to claim 4 wherein the system clock generator is further operational to generate sample clock signals at the sample rate determined by the control data bits.

6. The digital amplifier adaptive pulse frame rate frequency control system according to claim 4 further comprising a digital amplifier responsive to the system clock generator audio clock signals and the sample rate converter output data such that the digital amplifier output switches at a pulse-frame rate determined by the system clock generator audio clock signals and the sample rate converter output data.
7. The digital amplifier adaptive pulse frame rate frequency control system according to claim 6 wherein the digital amplifier output further switches at a pulse-frame rate to minimize interference associated with keep-out bands for frequencies related to a desired source.
8. The digital amplifier adaptive pulse frame rate frequency control system according to claim 7 wherein the keep-out bands are associated with frequencies selected from the group consisting of AM, FM and TV band frequencies.
9. The digital amplifier adaptive pulse frame rate frequency control system according to claim 7 wherein the keep-out bands are associated with frequencies selected from the group consisting of radio frequency (RF), intermediate frequency (IF), and Local Control Oscillator (LCO) frequencies.
10. The digital amplifier adaptive pulse frame rate frequency control system according to claim 7 wherein the keep-out bands are associated with wireless communication frequencies selected from the group consisting of cellular telephone frequencies and Bluetooth frequencies.
11. The digital amplifier adaptive pulse frame rate frequency control system according to claim 1 wherein the sample rate converter comprises a digital asynchronous sample rate converter.

12. A digital amplifier adaptive pulse frame rate frequency control system comprising:

a digital asynchronous sample rate converter operational to generate output audio data in response to input audio data, an input audio clock and a master clock;

a programmable controller operational in response to user selected input frequency information to generate control data bits, wherein the input frequency information is selected from the group consisting of wireless, cellular telephone, Bluetooth, RF, IF, LCO, AM, FM, and TV band frequencies;

a decoder operational to decode the control data bits; and

a system clock generator operational to generate the master clock in response to the decoded control data bits such that the digital asynchronous sample rate converter generates the output data at a sample rate determined by the user selected input frequency information.

13. The digital amplifier adaptive pulse frame rate frequency control system according to claim 12 wherein the programmable controller comprises a data processing device selected from the group consisting of a computer, a DSP, a CPU, and a micro-controller.

14. The digital amplifier adaptive pulse frame rate frequency control system according to claim 12 wherein the system clock generator comprises a frequency controller selected from the group consisting of a digital frequency synthesizer, and a programmable phase-locked loop.

15. The digital amplifier adaptive pulse frame rate frequency control system according to claim 12 wherein the system clock generator is further operational to generate audio clocks at the sample rate determined by the user selected input frequency information.

16. The digital amplifier adaptive pulse frame rate frequency control system according to claim 15 further comprising a digital amplifier responsive to the system clock generator audio clocks and the digital asynchronous sample rate converter output audio data such that the digital amplifier output switches at a pulse-frame rate determined by the user selected input frequency information.

17. The digital amplifier adaptive pulse frame rate frequency control system according to claim 16 wherein the digital amplifier output switches at a pulse-frame rate to minimize interference with keep-out bands associated with the input frequency information.

18. A digital amplifier adaptive pulse frame rate frequency control system comprising:

digital asynchronous sample rate converting means for generating output audio data in response to input audio data, an input audio clock and a master clock;

programmable controlling means for generating control data bits in response to user selected input frequency information, wherein the input frequency information is selected from the group consisting of RF, IF, LCO, AM, FM, TV, wireless, cellular telephone and Bluetooth band frequencies;

decoding means for decoding the control data bits; and

clock generating means for generating the master clock in response to the decoded control data bits such that the digital asynchronous sample rate converting means generates the output data at a sample rate determined by the user selected input frequency information.

19. The digital amplifier adaptive pulse frame rate frequency control system according to claim 18 wherein the programmable controlling means comprises a data processing device selected from the group consisting of a computer, a DSP, a CPU, and a micro-controller.

20. The digital amplifier adaptive pulse frame rate frequency control system according to claim 18 wherein the clock generating means comprises a frequency controller selected from the group consisting of a digital frequency synthesizer, and a programmable phase-locked loop.
21. The digital amplifier adaptive pulse frame rate frequency control system according to claim 18 wherein the clock generating means is further operational to generate audio clocks at the sample rate determined by the user selected input frequency information.
22. The digital amplifier adaptive pulse frame rate frequency control system according to claim 21 further comprising a digital amplifying means for generating an output signal that switches at a pulse-frame rate determined by the user selected input frequency information in response to the clock generating means audio clocks and the digital asynchronous sample rate converting means output audio data.
23. The digital amplifier adaptive pulse frame rate frequency control system according to claim 22 wherein the digital amplifying means output signal further switches at a pulse-frame rate that minimizes interference with keep-out bands associated with input frequency information.
24. The digital amplifier adaptive pulse frame rate frequency control system according to claim 18 wherein the clock generating means is further operational to generate sample clocks at the sample rate determined by the user selected input frequency information.

25. A method of controlling the pulse-frame rates for a digital amplifier output signal comprising the steps of:

providing a pulse-frame rate frequency control system having a programmable controller, a system clock generator, and a digital asynchronous sample rate converter operational to generate output audio data at a first sample rate in response to input audio data and further in response to input audio clocks;

communicating user selected input frequency data to the controller such that the controller generates control data bits determined by the user selected input frequency data;

communicating the control data bits to the system clock such that the system clock generates a master clock for the digital asynchronous sample rate converter at a new sample rate and further such that the system clock generates output audio clocks at the new sample rate; and

adapting the digital asynchronous sample rate converter output audio data at a first sample rate to conform to the new sample rate determined by the master clock.

26. The method according to claim 25 further comprising the steps of:

providing a digital amplifier having output switching responsive to the digital asynchronous sample rate converter output audio data and further responsive to the output audio clocks at the new sample rate; and

communicating the digital asynchronous sample rate converter output audio data and the output audio clocks at the new sample rate to the digital amplifier such that the digital amplifier operates to change its output switching pulse-frame rate from a first pulse-frame rate to new pulse-frame rate.

27. The method according to claim 25 further comprising the steps of:

providing a digital amplifier having output switching responsive to the digital asynchronous sample rate converter output audio data and further responsive to the output audio clocks at the new sample rate; and

communicating the digital asynchronous sample rate converter output audio data and the output audio clocks at the new sample rate to the digital amplifier such that the digital amplifier operates to change its output switching pulse-frame rate to a new pulse-frame rate that substantially minimizes interference with keep-out bands associated with the frequency group consisting of AM, FM, and TV band frequencies.

28. The method of claim 25 wherein the step of communicating user selected input frequency data to the controller such that the controller generates control data bits determined by the user selected input frequency data comprises the step of providing a look-up table of pulse-frame frequencies (output digital asynchronous sample rate converter clock generator frequencies) versus station data selected from the group consisting of RF, IF, LCO, AM, FM, TV station, wireless, cellular telephone and Bluetooth frequencies, that can be accessed by the controller to determine the control data bits.

29. The method of claim 25 wherein the step of communicating user selected input frequency data to the controller such that the controller generates control data bits determined by the user selected input frequency data comprises the step of providing an algorithm to select pulse-frame frequencies (output digital asynchronous sample rate converter clock generator frequencies) versus station data selected from the group consisting of RF, IF, LCO, AM, FM, TV station, wireless, cellular telephone and Bluetooth frequencies, that can be accessed by the controller to determine the control data bits.